

transition probabilities. We assigned costs and health outcomes to each health state to estimate the cost per quality-adjusted life year (QALY). Analyses were made from the National Health System (NHS) perspective, including direct healthcare costs (2015 euros) and a discount rate of 3% was applied to both costs and health outcomes. Time horizon was patient lifetime's expectancy. We performed various sensitivity analyses, including probabilistic one, to assess the robustness of the results. **RESULTS:** Compared to standard treatment, edoxaban was cost-effective using the different time horizons (3, 6 and 12 months). At 12 months, edoxaban showed a slight increment in treatment costs of 152€ per VTE patient, but an increase in QALYs and Life Years Gained (LYG) resulting in cost-effective results. Edoxaban demonstrated incremental cost-effectiveness ratios (ICERs) of 6,333 € per QALYs and 10,857 € per LYG compared with standard treatment at 12 months. The results of the probabilistic sensitivity analysis confirmed the efficiency of edoxaban. **CONCLUSIONS:** From the Spanish NHS perspective, edoxaban is a cost-effective alternative for the treatment of VTE patients compared to standard therapy.

PCV99

OPPORTUNISTIC SCREENING FOR ATRIAL FIBRILLATION IN PRIMARY CARE – A CLINICAL AND COST-EFFECTIVENESS ANALYSIS

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OBJECTIVES: Screening for atrial fibrillation (AF) has been advocated as a way to reduce the burden of stroke. Good quality evidence suggests that while opportunistic and systematic screening produce comparable increases in AF detection, opportunistic screening does so at significantly less cost. However, uncertainty about the risk profile of undiagnosed patients and the overall cost-effectiveness of screening has meant that no national AF screening programmes have as yet been implemented. The aim of this study was to evaluate the cost-effectiveness of a prospective national AF screening programme on stroke incidence and severity. **METHODS:** We conducted a cost-utility analysis of opportunistic pulse palpation (with confirmatory ECG) in primary care in Ireland, comparing different start ages and screening frequencies. We also examined the implications of subclinical AF carrying a different risk of stroke than diagnosed AF, as well as the potential impact of increased use of new oral anticoagulant (NOACs) on the cost-effectiveness of screening. The primary analysis was conducted from the perspective of the publicly funded health system, using a time horizon of 25 years and a discount rate of 5% for costs and benefits. **RESULTS:** Annual screening from age 65 is associated with an ICER of €20,271/QALY, with an 83% probability of being cost-effective at a willingness-to-pay threshold of €45,000/QALY. Older start ages and longer screening intervals are likely to improve the cost-effectiveness of the intervention, but result in less absolute benefit. Annual screening from age 65 would not be cost-effective at a threshold of €45,000/QALY if the relative risk of stroke and systemic embolism in subclinical AF is less than 0.84. Changes in usage rates of NOACs are unlikely to significantly affect the cost-effectiveness of screening. **CONCLUSIONS:** Opportunistic screening in primary care increases AF detection, reduces stroke incidence, and is likely to be cost-effective using conventional willingness-to-pay thresholds.

PCV100

ECONOMIC EVALUATION OF TRIMETAZIDINE IN THE MANAGEMENT OF CHRONIC STABLE ANGINA IN GREECE

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OBJECTIVES: To evaluate the cost-effectiveness of trimetazidine (TMZ) as add-on therapy to standard-of-care (SoC) compared to SoC alone in patients with chronic stable angina who did not respond adequately to first line therapy with beta-blockers, nitrates or calcium channel antagonists, in Greece. **METHODS:** A Markov model with monthly cycles and 1-year time horizon was developed to assess the comparators. The analysis was conducted from a third-party payer perspective. The clinical inputs and utility values were extracted from the published literature. Cost inputs considered in the model include anti-anginal drug-acquisition costs, hospitalization costs (with and without vascular interventions), and monitoring costs that encompass outpatient visits, laboratory and diagnostic tests. Resource consumption data were obtained from local experts, using a questionnaire developed for the purpose of the study. These were combined with unit cost data obtained from official sources. All costs reflect the year 2014. Cost effectiveness was assessed by calculating the incremental cost effectiveness ratio (ICER). Probabilistic sensitivity analysis (PSA) was performed to account for uncertainty and variation in the input parameters of the model. **RESULTS:** The analysis showed that the cost of TMZ plus SoC was €1,055 versus €1,040 for SoC alone. In terms of health outcomes, TMZ plus SoC was associated with 0.617 QALYs versus 0.614 QALYs for SoC alone. The incremental analysis resulted in an ICER of €4,148 per QALY gained. PSA revealed that the probability of TMZ plus SoC being cost-effective compared with SoC was 95%, at a threshold of €34,000 per QALY gained (twice the average annual income). **CONCLUSIONS:** The results indicate that TMZ as add-on treatment is a highly cost-effective option for the symptomatic treatment of patients with chronic stable angina in Greece when compared to SoC alone.

PCV101

THE COST-EFFECTIVENESS OF TREATMENT FOR CHRONIC HEART FAILURE: A SYSTEMATIC REVIEW

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OBJECTIVES: To identify published cost-effectiveness analyses and health technology assessment (HTA) submissions for treatments in chronic heart failure (CHF) to inform future cost-effectiveness modeling in CHF. **METHODS:** A systematic review was performed. Literature searches were conducted in MEDLINE, EMBASE, EconLit, and the Cochrane Library, with supplementary hand searching of conferences and HTA websites. Eligible studies had to report on cost-effectiveness outcomes in adults with CHF and/or heart failure with reduced ejection fraction, treated with angiotensin-converting enzyme inhibitors, beta-blockers, mineralocorticoid receptor antagonists, angiotensin receptor blockers, or ivabradine. **RESULTS:** Sixty-six publications met the inclusion criteria, representing 63 distinct analyses. Of these, 53 reported their **METHODS:** 20 were statistical analyses of individual patient data, while 33 used decision-analytic modeling. Structures were most commonly described as being Markov (n=27) but the methods were heterogeneous. The health states most frequently employed were 'alive' or 'dead', with outcomes such as hospitalization or New York Heart Association (NYHA) class distribution most commonly considered as a partition of the 'alive' state. Other health states considered were often based on NYHA class, hospitalizations, and major CV events. Different approaches to modeling the effects of interventions on mortality were used; treatment effects were applied to cardiovascular (CV) mortality and all-cause mortality in nine and 20 studies (among the 33 decision-analytic models), respectively. Across included studies, the time horizon ranged from within-trial to lifetime. Outcomes were frequently sensitive to baseline risks of mortality and hospitalization, relative efficacy of interventions, and unit costs of interventions. **CONCLUSIONS:** The studies identified were heterogeneous with respect to their approaches; this may be due to the preference of payers in different jurisdictions. However, the identified literature suggests mortality and hospitalization are the key determinants of the cost-effectiveness of treatment for CHF.

PCV102

DEVELOPMENT OF A MODEL TO PROVIDE INSIGHT IN THE VALUE OF FIBRINOGEN CONCENTRATE FOR TREATING EXCESSIVE BLEEDINGS DURING COMPLEX CARDIOVASCULAR SURGERY

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OBJECTIVES: Bleeding during complex cardiac surgery is associated with several negative clinical outcomes. Fibrinogen concentrate (FC) is a coagulation factor concentrate that may positively affect these clinical outcomes. The objective of this study was to compare health economic outcomes between using a hemostatic therapy protocol with FC and a protocol without FC during complex cardiac surgery. **METHODS:** The input data of the model was based on a systematic literature search, and interviews with experts. Costs were retrieved from national databases. The primary effectiveness parameters were the number of blood transfusions avoided and the amount of blood loss avoided. One-way and probabilistic sensitivity analyses (PSA) were performed to test the robustness of results. **RESULTS:** Five studies were included, representing 143 patients. The incremental costs per blood transfusion avoided were €63 and per unit blood loss avoided €2.4. The average number of blood transfusions reduced with 10 units per patient [95% CI: 8 - 12] and blood loss with 391mL/12hrs [95%CI: 81mL/12hrs - 711mL/12hrs] in the with FC protocol compared to the without FC protocol, whilst costs slightly increased (+€611 [95%CI: €-2,210 - €3,399]). The FC protocol reduced the number of blood transfusions and blood loss in 100% of the simulations of the PSA, and reduced these clinical outcomes and costs in 33.3%. The FC dosage was the main cost driver in the model. The FC protocol would be cost-saving if lower FC dosages were used (e.g. 2 or 4 grams instead of 6.4 grams), or if costs of side effects were included (transfusion related lung injury and renal failure). **CONCLUSIONS:** Our study indicates that a hemostatic therapy protocol with FC is cost-effective in complex cardiovascular surgery, leading to better clinical outcomes with minimal incremental costs. Future studies need to provide clinical evidence that a lower dosage of FC will still suffice to ensure similar health outcomes.

PCV103

THE COST-EFFECTIVENESS OF NOVEL ORAL ANTICOAGULANTS FOR THE PREVENTION OF STROKE IN ATRIAL FIBRILLATION IN ENGLAND AND WALES

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OBJECTIVES: Determine the most cost-effective, licensed, first-line anticoagulant for the prevention of ischemic stroke in patients with non-valvular atrial fibrillation (AF) in England and Wales from the perspective of the UK National Health Service. **METHODS:** We developed a cost-effectiveness model based on a review of previous models and expert clinical opinion. We compared warfarin (International Normalized Ratio 2-3) with novel oral anticoagulants (NOACs) apixaban (5mg bd), dabigatran (150mg bd), edoxaban (60mg od) and rivaroxaban (20mg od), over 30 years post treatment initiation. Parameters were informed by a systematic literature review and competing risks network meta-analysis for comparative efficacy and safety of the anticoagulants and baseline hazard of warfarin. Utilities and resource use were estimated from the literature. Our model estimated total costs, Quality Adjusted Life Years (QALYs), and incremental net benefit relative to warfarin. **RESULTS:** At a willingness-to-pay threshold of £20,000 per QALY, all NOACs have positive expected incremental net benefit compared to warfarin, suggesting they may be a cost effective use of NHS resources. Apixaban (5mg bd) has the highest expected incremental net benefit (£7533), followed by rivaroxaban (£6365), edoxaban (£5279) and dabigatran (£5279). Apixaban is the only NOAC for which the 95% credible interval around incremental net benefit is positive, suggesting a higher degree of certainty that Apixaban is cost-effective compared with warfarin than for the other NOACs. These conclusions also hold at the higher thresh-

old of £30,000. **CONCLUSIONS:** At a willingness-to-pay threshold of £20,000 per QALY, all NOACs are cost-effective compared with warfarin. There is considerable uncertainty between the different NOACs, but apixaban (5mg bd) had the highest expected incremental net benefit and the highest probability (60%) of being most cost-effective first line anticoagulant for the prevention of stroke in AF, primarily due to lower rates of intracranial haemorrhage, other clinically relevant bleeding, and myocardial infarction.

PCV104

IS EDOXABAN COST-EFFECTIVE FOR NON-VALVULAR ATRIAL FIBRILLATION PATIENTS TREATED WITH VITAMIN K ANTAGONISTS IN SPAIN?

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OBJECTIVES: To assess the cost-effectiveness of edoxaban versus acenocoumarol (VKA treatment) in the prevention of stroke and systemic embolic events in patients with non-valvular atrial fibrillation (NVAF) in Spain. **METHODS:** A Markov model was developed and adapted to the Spanish setting to simulate the evolution of NVAF patients throughout their lifetime. The Cycle length was 1 month and different health states such as stroke, bleeding and other cardiovascular complications were defined to mimic NVAF natural history. Drug's safety and efficacy outcomes were obtained from the Phase III trial. The analysis was conducted from the Spanish National Health System (NHS) perspective. Edoxaban and acenocoumarol costs were calculated according to recommended doses. The costs of NVAF complications and disease management costs were obtained from available Spanish published sources. An annual discount of 3% for costs and health outcomes was applied. **RESULTS:** Edoxaban resulted on average with 0.337 quality-adjusted life-years (QALYs) gained and 0.285 life years gained (LYG) compared with acenocoumarol. Due to the projected longer survival of patients, edoxaban could generate more costs per patient than acenocoumarol from the NHS perspective, but the incremental cost-effectiveness ratio (ICER) for edoxaban was highly cost effective, at 7,888€ per LYG and 6,671 € per QALY gained. To evaluate study robustness subgroup analyses (such CHADS2>3 score and percentage of well controlled patients), and probabilistic sensitivity analyses were performed. Those analyses confirmed the ICERs for edoxaban to be cost-effective when applying the commonly accepted cost effectiveness threshold in Spain. **CONCLUSIONS:** Edoxaban is cost-effective compared with acenocoumarol from the NHS perspective in the prevention of stroke and systemic embolic events in patients with NVAF in Spain.

PCV105

COST-EFFECTIVENESS ANALYSIS OF BEMIPARIN USED AS ACUTE TREATMENT FOR DEEP VEIN THROMBOSIS WITHOUT PULMONARY EMBOLISM

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OBJECTIVES: Deep venous thrombosis (DVT) and pulmonary embolism (PE) comprise venous thromboembolism (VTE), the third most common cardiovascular illness after acute coronary syndrome and stroke and a raising public health concern due to its morbidity and mortality and higher costs. Acute and long term treatments help to avoid complications. We assessed the costs and effectiveness of different regimens for treatment of DVT without PE under the perspective of the Mexican public health system. **METHODS:** A seven-pathway decision tree allowed comparison of five competing strategies. Acute treatment for 7 days involved bemiparin 115UI/Kg once daily (BEM), enoxaparin 1.5mg/Kg once daily (ENO-OAD), enoxaparin 1.0 mg/Kg twice daily (ENO-BID), nadroparin 100UI/Kg twice daily (NAD) or unfractionated heparin administered as 80UI/Kg initial bolus followed by continuous infusion at a rate of 18/UI/Kg/hour (UFH). Long-term treatment consisted of daily doses of warfarin 5 mg given orally during 83 days (VKA). Direct medical costs included acquisition of medicines, care of further VTE episodes, and managing of adverse events/complications. Resource use was based on published literature and expert's opinion. Local unit costs and diagnosis-related groups (DRG) costs were gathered. Effectiveness is expressed in terms of VTE-free patients and deaths avoided per 1000 treated. Deterministic and probabilistic sensitivity analyses were conducted. **RESULTS:** Acute treatment with BEM was the most-effective intervention with benefits ranging from 33 VTE-free patients and 7 deaths avoided (Vs. ENO-OAD and ENO-BID, respectively) to 64 VTE-free patients and 21 deaths avoided (both Vs. NAD) per 1,000 treated. BEM followed by warfarin was also the less costly regimen leading to overall cost-savings varying between MXN\$3,067,626 (Vs. NFH) and MXN\$7,084,142 (Vs. NAD) per 1,000 treated. Model results were robust to plausible changes in main parameters. **CONCLUSIONS:** Bemiparin may present a cost saving alternative over the use of other low molecular weight heparins or UFH as initial therapy for patients affected by DVT without PE.

PCV106

ECONOMIC EVALUATIONS OF NEW ORAL ANTICOAGULANTS FOR THE PREVENTION OF VEIN THROMBOEMBOLISM AFTER TOTAL HIP OR TOTAL KNEE REPLACEMENT

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OBJECTIVES: The objectives of this systematic review were to identify published economic analyses of new oral anticoagulants (NOACs) for primary venous thromboembolism (VTE) prophylaxis following total hip replacement (THR) and total knee replacement (TKR) surgeries and to summarise the modelling techniques used and cost-effectiveness results. **METHODS:** Electronic searches of MEDLINE, EconLit, and the Cochrane Library were performed from January 2008 to February 2015 using a combination of Medical Subject Headings and free-text terms that were grouped into the following categories: population (including terms for thromboembolism and orthopaedic surgery), intervention (including terms for apixaban, dabigatran, edoxaban, and rivaroxaban), and study design (including terms for economic analy-

ses). **RESULTS:** Sixteen economic analyses were included; all studies used decision-tree structures to model acute prophylaxis, and 13 included a chronic-phase Markov module to capture long-term complications and recurrent VTE events. The model structures generally captured the important events needed to accurately estimate differences in costs and outcomes between different treatment strategies. Eleven studies included rivaroxaban, 9 studies included dabigatran, 3 studies included apixaban, and no studies included edoxaban. The analyses that compared a NOAC with low molecular-weight heparin (LMWH) predominantly resulted in the NOAC dominating LMWH for patients with both THR and TKR. The results of analyses that compared NOACs with each other suggested that dabigatran is the least cost-effective option. There is limited evidence directly comparing rivaroxaban with apixaban, but our results suggested that rivaroxaban dominates apixaban for patients with TKR in the United Kingdom. **CONCLUSIONS:** Economic analyses of NOACs for primary VTE prophylaxis following THR and TKR surgeries show reasonable consistency in the model structures used and events captured. The results strongly suggest that NOACs are cost-effective alternatives to LMWH. Dabigatran appears to be the least cost-effective NOAC. However, more research is needed to assess the cost-effectiveness of apixaban and edoxaban.

PCV107

COST-EFFECTIVENESS OF FERRIC CARBOXYMALTOSE IN PATIENTS WITH IRON DEFICIENCY AND CHRONIC HEART FAILURE IN AUSTRIA

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OBJECTIVES: Iron deficiency (ID) is highly prevalent in chronic heart failure (CHF) patients and imposes a significant disease burden for CHF patients with enormous impact on their outcome. Two pivotal studies (FAIR-HF and CONFIRM-HF) showed that the iron deficiency with ferric carboxymaltose (FCM), an i.v. iron, results in clinical meaningful benefits. The purpose of this study was to evaluate the cost-effectiveness of FCM versus no-treatment and oral iron supplementation in CHF patients with iron deficiency w/o anemia. **METHODS:** We developed a Cost-Utility-Model to simulate disease progression in CHF patients using different strategies of iron deficiency management. Markov modelling techniques were used to estimate disease progression, based on health states, defined by NYHA classes and death. Monte Carlo simulation accounted for uncertainty. The model includes 5 states and monthly transitions. Probabilities were derived from clinical and epidemiological studies. The cohort definition was adapted from the FAIR-HF study. Direct costs (NYHA, inpatient, outpatient and iron treatment costs) from published sources were used and expressed in 2014 Euro from the payer's perspective. QALYs and total costs were projected over a 4-year time horizon and discounted at 5% p.a. **RESULTS:** Over a 4-year timeframe, costs and outcomes associated with FCM would amount to 18,797.39 € and 2.46 QALYs. Costs associated with oral treatment are 17,307.06 € and 2.37 QALYs (ICER per QALY gained: €16,921.62). Costs and outcomes associated with no-treatment are 17,934.15 € and 2.3 QALYs (ICER per QALY gained: 5,411.23 €). Due to a delayed disease progression in the FCM group NYHA costs are lower than with oral replacement and no-treatment. **CONCLUSIONS:** Iv iron treatment with FCM compared with oral iron in iron deficient CHF patients is clearly below the CE threshold of €22,200-€33,300/QALY typically used by the UK NICE and hence can be considered a cost efficient treatment strategy.

PCV108

COMPARISON OF OVERALL COSTS BETWEEN ALPROSTADIL AND LIMB AMPUTATION IN PATIENTS AFFECTED BY PERIPHERAL ARTERIAL DISEASE STAGES III AND IV IN MEXICO

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OBJECTIVES: Peripheral arterial disease entails increased mortality besides a significant economic and humanistic burden, especially in patients with critical limb ischemia (CLI; stages III and IV). Prostanoids are usually indicated to those unsuitable for interventional therapy. We aimed to assess the overall costs of alprostadil (prostaglandin E1) as treatment for CLI compared with amputation from the perspective of the Instituto Mexicano del Seguro Social (IMSS). **METHODS:** Based on published literature, information derived from an expert panel, and local official sources of unit costs and other parameters, we evaluated three categories of costs: acquisition and administration of alprostadil given 40µg twice a day for 28 days; surgery, hospital stay, and rehabilitation after amputation; incapacity, prosthesis, and pensions in assumed current workers. We conducted the analysis for a time frame of one year using a decision tree developed in Microsoft Excel®. We gathered the effectiveness of alprostadil from a clinical trial. All costs are expressed in 2014 Mexican pesos (MXN). We performed a deterministic sensitivity analysis. **RESULTS:** Excluding the prosthesis costs, total direct medical costs of alprostadil were MXN 4006 (5.8%) lower than the direct medical costs expected with limb amputation (MXN 65,490 Vs. MXN 69,496). When costs due to incapacity, prosthesis, and pensions in the workforce subpopulation were included into the analysis, the net difference in favour of alprostadil reached MXN 8,864 (MXN 66,577 Vs. MXN 75,441) which is equivalent to an overall cost reduction of 11.8%. Deterministic sensitivity analysis showed the model is quite sensitive to the acquisition and intra-arterial costs of alprostadil. **CONCLUSIONS:** Acquisition and administration costs of alprostadil may be offset by the overall savings in direct medical costs and in payments due to incapacities and pensions.

PCV109

PHARMACOECONOMIC ANALYSIS OF VARIOUS TREATMENT STRATEGIES FOR PATIENTS WITH CHRONIC VENOUS INSUFFICIENCY OF THE LOWER LIMBS

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OBJECTIVES: Determining pharmacoeconomic efficiency of actovegin in complex therapy of complicated chronic venous disease of lower extremities. **METHODS:**